CLAIMS

1. A device for measuring exposure to radiations comprising at least one component for detecting photons or particles, associated with at least one circuit for acquiring and counting detection events, characterized in that the response curve of the number of counted events versus the number of photons or particles sensed by each detection component, is a monotonous increasing curve.

2. The device according to the preceding claim, wherein the response curve has a first response range which increases substantially linearly, the number of counted events increasing proportionally to the number of sensed photons or particles, followed by a second response range which is simply increasing, the number of counted events continuing to increase or remaining stable as long as the number of sensed photons or particles increases.

3. The device according to any of the preceding claims, comprising a detection entity formed with a plurality of elementary detectors respectively associated with a plurality of circuits for acquiring and counting events forming an electronic processing entity arranged according to a matrix layout.

4. The device according to any of the preceding claims, wherein the acquisition circuit comprises a signal processing circuit, delivering count

pulses corresponding to the detection events, the device comprising means for discontinuously resetting the pulse signal processing circuit.

5. The device according to any of the preceding claims, comprising means for triggering a resetting current in a charge accumulation stage of the acquisition circuit.

6. The device according to any of the preceding claims, comprising means for, after each detection event, rapidly triggering or after a charge-to-pulse conversion phase, the return to an idle operating point of an amplification stage of the acquisition circuit.

7. The device according to any of the preceding claims, comprising means for discharging capacitive means of a charge accumulation stage, in response to each detected event.

8. The device according to the preceding claim, comprising means for shortening the discharge of the capacitive means.

9. The device according to any of the preceding claims, comprising means for generating two discharge current values in a charge conversion stage.

10. The device according to any of the preceding claims, comprising means for switching the

discharge current value in a charge accumulation amplifier stage.

11. The device according to any of claims 5 to 10, wherein the discharge current of the charge accumulation stage assumes a first value during the idle times and a second value when detecting an event, the second value being larger than the first value.

12. The device according to any of the preceding claims, wherein a charge conversion stage includes a continuous discharge current source and a triggered or switched discharge current source.

13. The device according to any of the preceding claims, comprising switching means capable of short-circuiting capacitive means of a charge conversion stage.

14. The device according to any of the preceding claims, wherein the acquisition circuit comprises a charge accumulation stage comprising a current source and a switch connected in parallel to input and output terminals of an amplifier and/or a capacitance.

15. The device according to any of claims 11 to 14, wherein the value of the discharge current of the charge accumulation stage during the idle time is adjusted to a value of the order of the parasitic, leakage or darkness current of the detector component.

16. The device according to any of the preceding claims, wherein the acquisition and counting circuit comprises a feedback or counter reaction loop between a point downstream from a charge accumulation stage and said stage.

17. The device according to the preceding claim, wherein the feedback control loop retransmits signals of count pulses.

18. The device according to claim 16 or 17, wherein the feedback loop transmits a signal from a threshold comparator stage.

19. The device according to any of claims 16 to 18, wherein the feedback loop controls switching means connected to terminals of the charge accumulation stage.

20. The device according to any of claims 16 to 19, wherein the feedback loop controls a discharge current source.

21. The device according to any of the preceding claims, comprising means for increasing the rise amplitude of a pulse signal emitted during each detection event associated with means for reducing the fall time of said signal.